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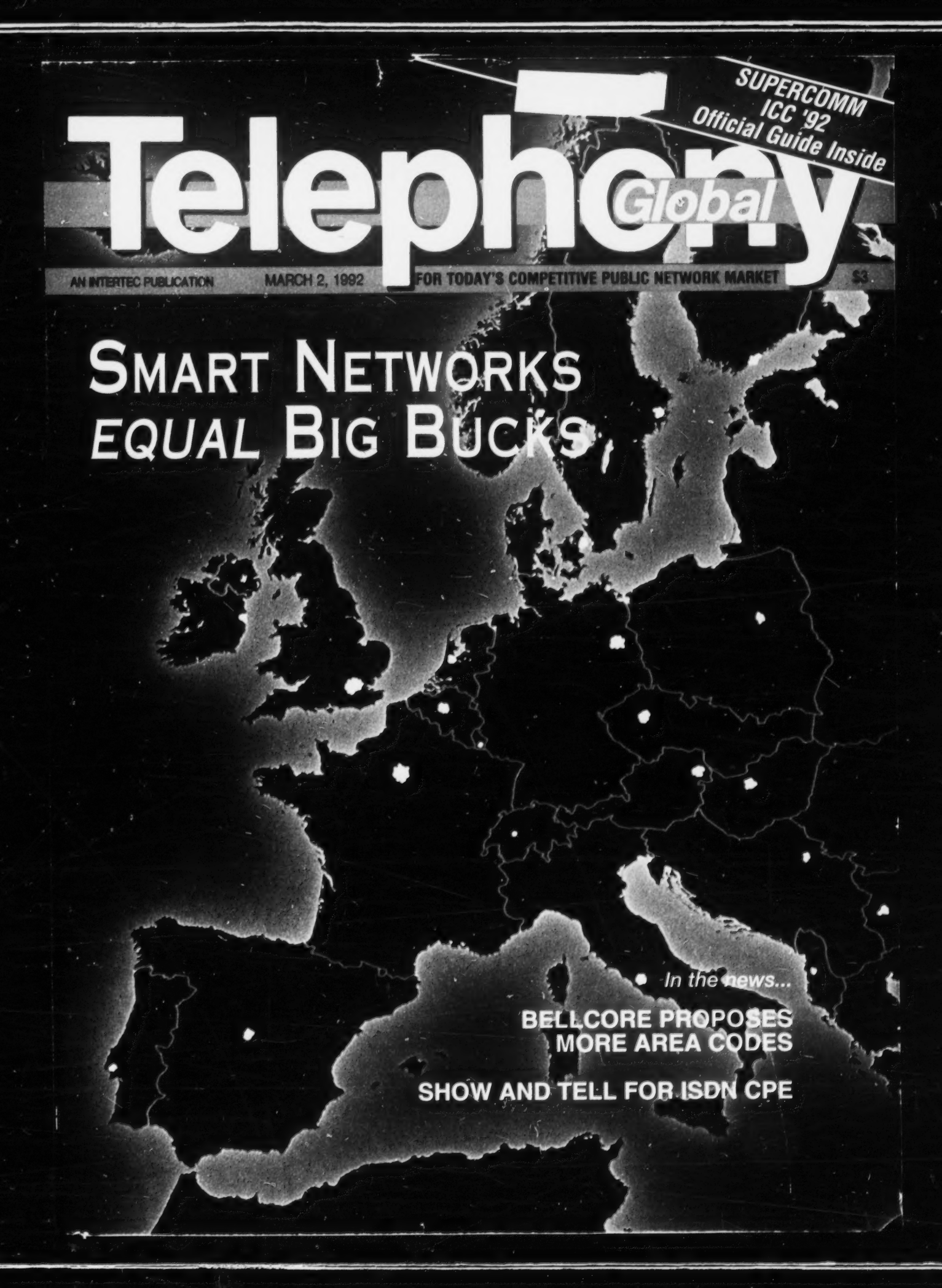


SMART NETWORKS *EQUAL* BIG BUCKS

In the news...

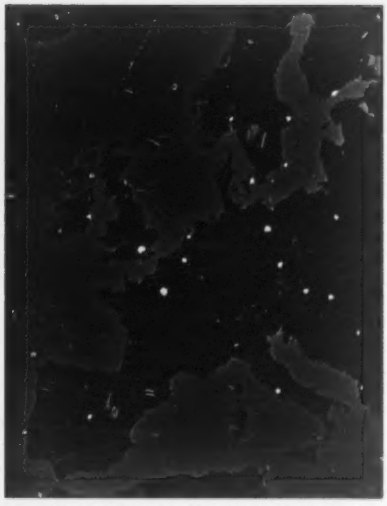
BELLCORE PROPOSES MORE AREA CODES

SHOW AND TELL FOR ISDN CPE

MONDAY, MARCH 2, 1992 Volume 222, No. 9

Telephony

FOR TODAY'S COMPETITIVE PUBLIC NETWORK MARKET



The intelligent network will dominate the international landscape in the 21st century. Cover art by Terje Kveen, The Image Bank.

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Bellcore proposes 640 new North American area codes

Ann H. Lindstrom, Assistant Editor

Bellcore has gone public with a proposed two-part plan for resuscitating the dwindling supply of area codes in the United States, Canada and the Caribbean, which together make up World Zone 1.

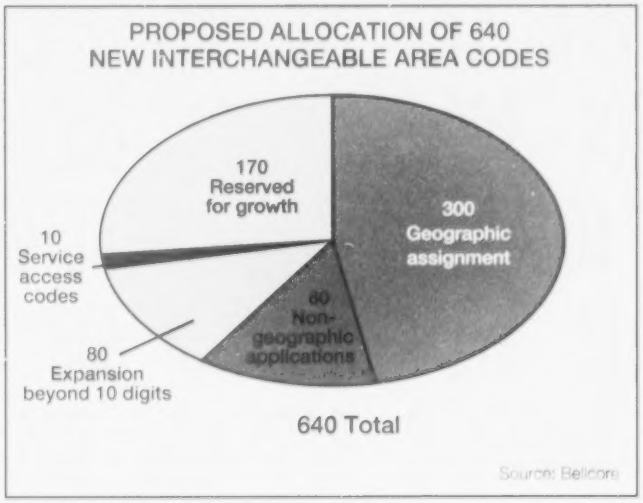
The North American Numbering Plan Administration, the Bellcore agency with government mandate to oversee the creation and allocation of area codes and phone numbers, drafted the proposal to spark industrywide discussion, said Fred Gaechter, member of Bellcore technical staff and author of the plan. The proposal, in the planning process for more than a year, is a response to not only population growth, but the explosive growth of facsimile machines, pagers, cellular phones and other devices, all of which will exhaust the current area code system by July 1995, according to Bellcore estimates *(Telephony, Dec. 24, 1990, page 11)*.

Discussion, however, may not be limited to the plan's merits or shortcomings. Several of the Bell operating companies' competitors have started to question Bellcore's lead role in the administration of the North American Numbering Plan. The topic drew heated comments from MCI Chairman William McGowan at the recent Communication Networks '92 show *(Telephony, Feb. 3, page 12)* and disapproval last week from Royce Holland, president and CEO of Metropolitan Fiber Systems.

"The numbering plan is a national asset, and it shouldn't be a property of the Bell operating companies," said Holland. "We think it's very inappropriate for them to control the numbering system. It's clearly a case of having the fox guarding the hen house."

The proposal is not an NANPA attempt to dictate what should happen, countered Gaechter, who was in Washington, D.C., last week briefing the U.S. Telephone Association's Number Planning Subcommittee on the plan. Should NANPA fail to reach an industrywide consensus on its proposal, the matter will be turned over to the Federal Communications Commission. The FCC oversees all decisions made by NANPA, he added.

The proposal would make available 640 new interchangeable area codes for use beginning in 1995. By then, only two available codes will remain, said Gaechter. The new plan allows the numbers two through nine to be used as the middle digit of an area code, tripling the amount of available codes.



According to the plan, 300 of the 640 new codes would be set aside for assignment to specific geographic areas. An additional 90 codes would be reserved for non-geographic uses, including 80 for personal communications and other services that are not tied to any one territory. Ten codes would be designated for special-purpose service access codes such as 800 or 900 codes. An additional 80 codes would be marked for the ultimate expansion of the NANPA beyond 10 digits and the remaining 170 codes would accomodate growth.

NANPA also recommended creating an advisory council composed of representatives of organizations that speak for companies or governmental bodies affected by the plan.

The plan's long-range goal is to ultimately require uniform 10-digit dialing throughout World Zone 1.

"Ten-digit dialing is not imminent, but it is the goal," said Gaechter.

The document has been sent to more than 3000 telephone companies, manufacturers and government agencies for comments, which are due April 30. If consensus cannot be reached, all of the information will be turned over to the FCC for final consideration.

FCC intervention would be welcomed by at least one BOC competitor.

The FCC ought to designate a neutral agency or contractor to administer a plan, said Holland. NANPA's past performance is not a factor because the potential for abuse will continue to increase as the industry becomes more competitive, he added.

"In the future there will be competitive pressures, and despite how sincere and hardworking and unbiased [NANPA staff is], their organization still is owned by our competitors," said Holland. "I could cite dozens of instances where the Bell operating companies have abused their monopoly. Given their track record for doing anything they can to preserve their monopoly, I wouldn't put it past them in this instance either."

Standards setting for use of the numbers could be slanted against BOC competitors and delays in number assignment or gerrymandering of number allocation are potential abuses, he noted. The assignment of vanity numbers also could harbor potential problems.

Holland has already registered MFS' disapproval of the situation with the FCC and the National Association of Regulatory Utility Commissioners and even broadened its response to include number portability as well.

"Number assignment and number portability are critical issues when creating a level playing field," he said. ☐

Confusion Clouds U.S. Telecom Equipment Trade

FRANCIS J. CRONIN, ELISABETH K. COLLERAN and PAUL L. HEBERT

U.S. policy-makers currently are struggling to create a regulatory environment that will best promote U.S. development of internationally competitive telecommunications equipment. Will allowing the Bell operating companies greater freedom to engage in equipment manufacture be ultimately beneficial or detrimental? It is difficult to assess the economic impact of regulatory options when an issue as fundamental as the size of the U.S. telecommunications equipment trade balance (deficit) is in question.

To establish an accurate framework to analyze this situation, a DRI/McGraw-Hill research team focused on developing an accurate and historically consistent definition of the telecom equipment industry and exploring the underlying macroeconomic influences affecting its trade position.

The deficit stood at $2.7 billion in 1989 and did, in fact, improve in 1990, dropping 15%. But it still remains substantial: $2.4 billion in 1990. Furthermore, because it is largely a result of temporary, cyclical macroeconomic factors, this 15% reduction may not actually represent an improvement. In fact, since these factors resumed their normal trend during late 1991, the 1992 deficit could actually exceed its 1989 peak.

The debate surrounding the U.S. Senate's passage last June of the Telecommunications Equipment Research and Manufacturing Competition Act of 1991 signifies the degree to which the international competitiveness of the U.S. telecom equipment industry has become a controversial issue of national priority. There are two fundamental questions: Is the U.S. competitive internationally in telecom equipment and the associated software manufacturing? And, would allowing the BOCs greater freedom to manufacture such equipment promote and protect U.S. competitiveness?

The lack of consensus among reporting agencies and user groups on the actual size of the trade deficit is causing some of the confusion. Figures cited for the 1990 deficit range from $792 million to $2.9 billion, and though all agree that the deficit clearly improved in 1990, sources differ widely on the extent of the improvement. In addition, radically different interpretations of the data have been offered.

Randall L. Tobias, vice chairman of AT&T, has suggested that the 70% decline in the equipment trade deficit from 1988 to 1990 indicates that U.S. products are fully competitive against foreign products.

This statement was in response to an earlier article by Sam Ginn, chairman and CEO of Pacific Telesis, in which he argued that the current trade deficit threatens America's leadership in international commerce.

Measuring the Trade Balance

To construct a complete and accurate industry definition, we examined standard classification systems used by the Census Bureau, the International Trade Administration and the Organization for Economic Cooperation and Development.

These organizations include the four categories that constitute the U.S. Standard Industrial Classification sector 3661 (telephone & telegraph apparatus) in their definitions of telecom equipment: telephones, switching, terminal apparatus and other telegraph apparatus.

Once the definition is extended to consider other equipment—network equipment, communications satellites, TV and radio transmission equipment, and other communications equipment—the consensus among reporting agencies dissolves. The ITA is the broadest, followed by the Census Bureau (which includes TV and radio equipment and other communications equipment) and the OECD (which includes other communications equipment).

Furthermore, these categories are inconsistent. Within the category of other communications, Census includes while ITA excludes: motor vehicle signaling equipment, microphone parts, radio transceivers, TV cameras (exports), camcorders and parts (imports), antennas, TV camera parts, TV apparatus and radio receivers, electrical signaling or traffic control, burglar alarms and smoke detectors. Some of these items belong only peripherally in telecommunications. Camcorder and parts imports accounted for more than $1.7 billion in 1990.

These different definitions result in vastly different reported overall trade balances for telecom equipment (Figure 1).

We used the narrower definition for our study and made two ad-

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justments to account for historical reporting inconsistencies resulting from the U.S. adoption of the harmonized trade classification system in 1989. With regard to imports, we augmented the pre-1989 figures to include cordless handsets in the harmonized definition.

On the export side, however, the effects of harmonization, coupled with classification changes such as the 1987 revision of the SIC codes, make it difficult to construct a consistent historical picture of U.S. telecom equipment trade.

For example, 1989 trade figures appear to reflect a staggering 48% improvement in telecom equipment exports over 1988 levels. This export growth may reflect classification adjustments at the ports following the adoption of more detailed harmonized codes, rather than an actual increase in exports.

We adjusted the 1989 and 1990 export figures using "mirror image" import levels as a basis. These adjustments represent the most historically and internationally accurate definition of the telecommunications sector.

Using this definition (SIC 3661A), the U.S. balance of trade in telecom equipment recorded a small surplus ($170 million) in 1982 and turned negative (-$484 million) in 1983. Despite some growth in exports (especially resulting from improved sales of switches and telephone instruments in the mid-1980s), imports continued to flood the U.S. market throughout the decade. While exports increased at a compound annual rate of 15% from 1983 to 1989, imports grew by 30%. By 1989, the telecom equipment trade deficit had reached a record level of $2.8 billion.

In 1990, a 14% increase in exports combined with a 4% decline in imports resulted in a 15% improvement in the equipment trade balance. The deficit, however, remains at $2.4 billion. In spite of the steady increase in telecom equipment exports during the 1980s, the U.S. has barely kept a constant share of the export market; the U.S. share of total OECD exports stood at 12.6% in 1990, the same level as 1981. Only a handful of U.S. industries had worse import penetration. In 1979, imports accounted for $4 out of every $100 of U.S. telecom equipment purchases; by 1990, this figure had grown to $29 out of every $100.

FIGURE 1 COMPARISON OF TELECOMMUNICATIONS EQUIPMENT BALANCE OF TRADE (IN MILLIONS OF DOLLARS)

Year	ITA	Census	OECD	SIC 3661	SIC 3661A
1985	(1867)	(1517)	(1267)	(1239)	(1409)
1986	(2031)	(1934)	(1473)	(1253)	(1482)
1987	(2550)	(2558)	(1836)	(1573)	(1931)
1988	(2608)	(2514)	(2106)	(1954)	(2357)
1989	(1935)	(3728)	(1436)	(2425)	(2762)
1990	(712)	(2857)	(994)	(1977)	(2358)

Source: DRI/McGraw-Hill

Low-tech items—particularly telephones—are the largest component of telecom equipment imports into the U.S., particularly from Far East producers. Since 1986, supply has shifted rapidly from the newly industrialized countries of Singapore, South Korea and Taiwan—which had an aggregate 1986 import share of 49.9%—toward lower cost producers such as China, Malaysia and Thailand.

Imports of more high-tech switching equipment have experienced a major shift from Japanese dominance to Canada and Western Europe, although Japan continues to dominate U.S. imports of terminal apparatus and facsimile machines.

Overall, Japan accounts for almost 34% of total U.S. imports, down from almost 47% in 1982 (Figure 2). Japan imports only 3% of OECD exports despite nearly 10 years of pressure to open its markets and the fact that Japan accounts for 27% of total OECD exports to the world.

The U.S. has succeeded in penetrating the Japanese market—with $275 million in exports representing the largest share of foreign-produced telecom equipment purchased by Japan in 1990—although the trade deficit with Japan stands at $1.2 billion.

From 1987 to 1990 U.S. telecom equipment exports to Europe more than tripled, exceeding $700 million (close to one-third of total U.S. industry exports). In fact, the U.S. maintains a telecom equipment trade surplus with Europe (more than $500 in 1990), but this surplus does little to offset the $2.5-billion deficit with Japan and other Far East suppliers.

Factors Affecting the Balance

Much of the recent improvement in our trade balance does not reflect improved competitiveness, but is actually the result of macroeconomic conditions and policy choices. Three principal factors affect the trade balance: cyclical macroeconomic effects, structural impacts and pricing effects.

Three economic factors contributed significantly to the telecom trade balance through the 1980s.

Previous DRI studies determined that a direct relationship exists between overall economic activity and telecom equipment purchases. A stronger U.S. economy boosts the demand by U.S. firms for telecom equipment—including imports. Gross national product (GNP) is clearly not the only factor that affects imports; however, holding all other factors constant, DRI's econometric analysis indicates that between 1982 and 1990 a 1% increase in real GNP yielded a 5% increase in real telecom equipment imports.

Our statistical analysis showed that price changes, including exchange rate movements, affect both imports and exports. Price changes have a substantially larger effect on the import side. This is because U.S. imports are mainly low-tech equipment such as tele-

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phones, which tend to be price-sensitive; U.S. exports are primarily high-tech equipment such as switching apparatus, which is price-insensitive.

The effect of a depreciation in the dollar is intensified by the relative price sensitivity of exported vs. imported products. The dollar did depreciate: The trade-weighted exchange rate, indexed to 1.00 in 1982, peaked at 1.4 in 1985 and dropped to a 12-year low of 0.865 in 1990.

U.S. telecom equipment exports also are positively affected by the level of economic activity in export markets. Of the 16 major trading partners, nine experienced higher growth in 1990 relative to the 1985-1990 average, representing a greater-than-normal demand for U.S. exports.

Ups and Downs

Changes in these economic factors mitigated the trade deficit. Specifically, more than two-thirds of the improvement in the telecom trade balance from 1989 to 1990 was a result of these cyclical changes.

DRI's integrated system of international macroeconomic models was used to project the near-term international economic environment. The projected upswing in the domestic economy will renew U.S. demand for telecom equipment by 1992, increasing imports.

The weak performance of major trading partners (including Canada, the U.K. and Germany) will keep exports stagnant at their current $1.9-billion level. By 1992, with the return to strong growth in imports ($4.9 million), we project the trade deficit for SIC 3661A will once again exceed $2.8 billion.

In analyzing the trade balance for the telecom equipment sector, it is also necessary to account for major policy decisions that have structurally altered the international flow of telecom equipment. After decades of functioning as government-protected monopolies, global telecom providers have evolved into relatively competitive domestic market systems.

Governments, through their own initiative or external pressure, have sought to increase the efficiency of their national telecom systems by relaxing restrictive procurement policies and lifting trade barriers.

Although telecom liberalization began in the early 1980s, and the pace of reform increased throughout the decade, dramatic policy changes in 1989 and 1990 greatly encouraged the flow of American goods into foreign markets. In 1990, U.S. telecom equipment exports to Canada, Mexico, Japan, Taiwan and members of the European Community increased by 53% ($450 million) over 1989 levels.

It is difficult to measure the growth in U.S. telecom equipment exports that is directly attributable to the opening of overseas markets. It should be noted, however, that U.S. exports showed little growth from 1982 to 1986.

Over the next two years major changes in regulations facing world telecom markets will likely be implemented (that is, policy liberalization and European Community harmonization) and trade flows will be more reflective of competitive pricing and quality.

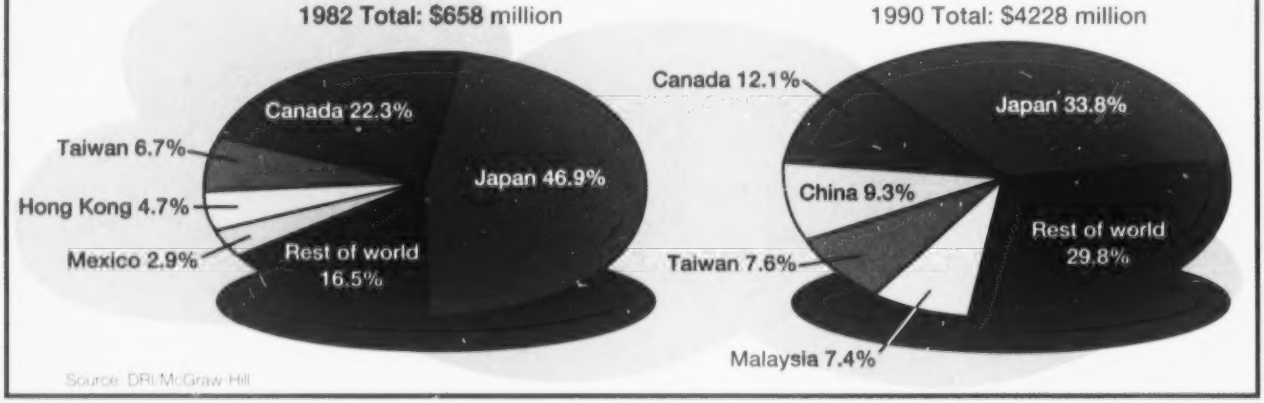
Pricing Effects

Prices can affect the apparent size of the trade deficit dramatically, sometimes obscuring the relationship between dollar sales and units sold. This price effect was particularly noticeable with regard to U.S. imports of fax machines.

The figures indicate a $180-million decline in the value of fax machine imports from 1989 to 1990. But the number of fax machine imports increased by 2%. The resulting decrease in price per unit was largely a function of the depreciation of the yen and does not necessarily reflect a reduced dependence on foreign supply. The analysis of unit imports vs. value indicates that measuring trade exclusively in dollars can lead to faulty conclusions.

Even though the U.S. trade deficit in telecom equipment did decline in 1990, it remains at $2.4 billion. The improvement was largely a result of inconsistent recording procedures, independent macroeconomic variables and structural impacts rather than a sustainable improvement in the industry's competitiveness. If the U.S. is to remain competitive in the international area, policies must be designed based on facts, not fallacies. ■

FIGURE 2 TOTAL U.S. IMPORTS IN 1982 AND 1990



Source: DRI/McGraw-Hill

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